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EXAMINER
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STORM, DONALD L

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/644,886	Applicant(s) CHEONG, HWAJIN	
	Examiner Donald L. Storm	Art Unit 2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on August 19, 2003 through February 5 2004.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7 and 15 is/are rejected.
- 7) ☒ Claim(s) 3,6 and 8-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/5/04</u> ✓ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Information Disclosure Statement*

1. A copy of the International Preliminary Examination Report (Form PCT/IPEA/409) (received February 5, 2004) is present. The IPER and its cited documents have been considered by the Examiner.
2. A copy of the International Search Report (Form PCT/ISA/210) (received February 5, 2004) is present. The search report and its cited documents have been considered by the Examiner.

### *Specification*

3. The title is objected to because it is not sufficiently descriptive of the invention. A new title is required that is clearly indicative of the invention to which the claims are directed. See MPEP § 606.01. The Examiner suggests that the Applicant consider a title including these elements: "Iteratively Determining Environment for Voice Reproduction and Removal."
4. The abstract is objected to under 37 C. F. R. § 1.72 because it does not describe the disclosure sufficiently, particularly the matter claimed as new. A cursory inspection of the abstract should inform readers of the nature and gist of the technical disclosure. See MPEP § 608.01(b). Appropriate correction is required. The following additional matter contained in the disclosure should be briefly mentioned:
  - a. a-d converters, adder, d-a converters, switch, conversion of analog object signal to digital, selecting received sound or selecting d-a conversion of memory sound (claim 1);

b. determining setting or normal operation, pulse, unique environmental coefficient, predetermined time after pulse output (claim 7);

c. repetition and repetition count, initialization, predetermined amplitude and width, setting period, accumulating, dividing (claim 11).

5. The Examiner notes, without objection, the possibility of informalities in the specification. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. The Applicant's cooperation is requested to consider correcting minor errors of which the Applicant may become aware during normal review and revision of the disclosure.

At 0025, line 1, should the phrase "voice command recognizer 100" be -- voice command identifier 100--?

#### ***Claim Informalities***

6. Claims 3, 6, and 8-14 are objected to because of certain informalities indicated elsewhere in this Office action. The claim(s) would be allowable over the prior art of record if rewritten to overcome any objections or rejections under 35 U.S.C. 112(2), especially as appearing in this Office action. Certain assumptions that make the limitations clear have been considered for the claims, as described next or elsewhere in this Office action. Dependent claims should also be rewritten to include all of the limitations of the base claim and any intervening claims.

7. The preamble of claim 1, and by dependency claims 2-6 and 15, are objected to under 37 CFR 1.75(a) because the invention established by the preamble is not carried out by the limitations

in the body of the claim. The preamble establishes a claim to a voice command identifier; however, the subject matter described by the limitations in the body of the claim is directed solely toward manipulation of digital and analog signals with input and output of sound (perhaps the voice-producible system). There is no voice command identifier. Thus, the body of the claim is unconnected to the voice and to the command identifier set forth in preamble, but the body of the claim is able to stand alone without reference to the voice and to the command identifier of the preamble. The disconnect may leave an artisan uncertain (1) whether the system of the claim includes processors of any sound and signals, (2) whether the scope is limited to signals and sounds that somehow correspond to voice and/or commands, or (3) perhaps whether the claimed invention includes sound and voice signals that might be used as commands sometime in the uncertain future according to some unspecified commanding means.

It may be confusing to establish a certain system to be achieved by modules, but to define the system only by modules that do not accomplish that objective.

The further limitations of dependent claims 2-6 do not provide the voice and command system set forth in the preamble.

8. Claim 1, and by dependency claims 2-6 and 15, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the received sound signal" (line 6) needs clarification. Because a received-by-a-microphone-and-converted sound signal and a received-by-a-first-analog-to-digital-converter-and-converted sound signal were previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to the --received-by-a-first-analog-to-digital-converter-and-converted sound signal--.

9. Claim 1, and by dependency claims 2-6 and 15, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the sound signal" (next to last line) needs clarification. Because an audible sound signal, an external sound signal, a received-by-a-microphone-and-converted sound signal, a received-by-a-first-analog-to-digital-converter-and-converted sound signal, and a received sound signal were previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to the --received-by-a-first-analog-to-digital-converter-and-converted sound signal--.

10. Claim 1, and by dependency claims 2-6 and 15, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the selected output" (last two lines) needs clarification. Because no selected output was previously recited, it may be unclear as to what element this phrase refers. It may refer to selected analog signals output or it may refer to the output that somehow characterizes the selecting switch in some unspecified manner. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to --an output selected by the switch--.

11. Claim 3 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the output signal" (line 3) needs clarification. Because no "output signal" was previously recited expressly, it may be unclear as to what element this phrase refers, particularly in view of the several signals recited in claim 1 as output. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to --the output from the first digital-to-analog converter--.

12. Claim 6 is objected to under 37 CFR 1.75(a) because the meaning of the phrase “the analog signal” (next to last line) needs clarification. Because a converted-from-the-accumulated-result analog signal and converted-from-retrieved-data analog signals were previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to the --converted-from-the-accumulated-result analog signal--.

13. Claims 3, 6, and 8-10 are objected to as being dependent on a rejected base claim. See MPEP § 608.01(n)V.

14. The preamble of claim 7 is objected to under 37 CFR 1.75(a) because the invention established by the preamble is not carried out by the limitations in the body of the claim. The preamble establishes a claim to a voice command identifying method; however, the subject matter described by the limitations in the body of the claim is directed solely toward manipulation of digital and analog signals with pulse output and input of sound (perhaps the production of the voice-producible system). There is no identifying a voice command. Thus, the body of the claim is unconnected to the voice and to the command identification set forth in preamble, but the body of the claim is able to stand alone without reference to the voice and to the command identification of the preamble. The disconnect may leave an artisan uncertain (1) whether the system of the claim includes any pulses and signals, (2) whether the scope is limited to signals and pulses that somehow correspond to voice and/or commands, or (3) perhaps whether the claimed invention

includes voice pulses and/or voice signals that might be used as commands sometime in the uncertain future according to some unspecified commanding means.

It may be confusing to establish a certain system to be achieved by modules, but to define the system only by modules that do not accomplish that objective.

15. The preamble of claim 11, and by dependency claims 12-14, are objected to under 37 CFR 1.75(a) because the invention established by the preamble is not carried out by the limitations in the body of the claim. The preamble establishes a claim to a voice command identifying method; however, the subject matter described by the limitations in the body of the claim is directed solely toward manipulation of digital and analog signals with pulse sound output and microphone output (perhaps the sound of the voice-producible system). The body of the claim does not identify a voice command. Thus, the body of the claim is unconnected to the voice and to the command identification set forth in preamble, but the body of the claim is able to stand alone without reference to the voice and to the command identification of the preamble. The disconnect may leave an artisan uncertain (1) whether the system of the claim includes any pulses and signals, (2) whether the scope is limited to signals and pulses that somehow correspond to voice, to commands, or somehow to both, or (3) perhaps whether the claimed invention includes voice pulses and/or voice signals that might be used as commands sometime in the uncertain future according to some unspecified commanding means.

It may be confusing to establish a certain system to be achieved by modules, but to define the system only by modules that do not accomplish that objective.

The further limitations of dependent claims 12-14 do not provide the voice and command system set forth in the preamble.



16. Claim 15 is objected to under 37 CFR 1.75(a) because the meaning of the phrase “the sound signal” (line 2) needs clarification. Because an audible sound signal, an external sound signal, a received-by-a-microphone-and-converted sound signal, a received-by-a-first-analog-to-digital-converter-and-converted sound signal, and a received sound signal were previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to the --received-by-a-first-analog-to-digital-converter-and-converted sound signal--.

***Claim Rejections - 35 USC § 102***

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Rodriguez**

18. Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Rodriguez et al. [US Patent 6,889,191].

19. Regarding claim 7, Rodriguez [at column 26, line 65-column 27, line 9] describes an embodiment with setting operation that acquires an environmental coefficient. Rodriguez [at

abstract] describes a voice command identifying method and describes the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

determining whether a setting operation is to be performed [at column 25, lines 33-43, as the system effects a menu, the user enters an input to select training, and the training procedure is entered];

in case the determination result shows that the setting operation is to be performed [at column 25, line 54-column 26, line 7, as thereafter signal to initiate training and effect enable reception of the signal comprising pinknoise emitted];

output a pulse [at column 26, lines 8-12, as emit a pinknoise pulse];

and acquire an environmental coefficient [at column 27, lines 6-8, as compute and store an estimate of signal degradation];

by digitizing a signal input into a microphone [see Fig. 6, items 891, 900, and their descriptions, especially at column 16, lines 47-50, of digitizing from the microphone];

the signal input is digitized for a predetermined time period [at column 21, lines 3-30, as the incoming digital stream is stored in an incoming audio buffer fixed to a size];

the signal input is digitized after the pulse is output [at column 23, lines 23-25, as effect the record of incoming audio signal at the end of emission of the pinknoise pulse];

the pulse is of predetermined amplitude [at column 27, lines 3-5, as the amplitude of emitted version of pinknoise stored in the outgoing audio buffer];

the pulse is of predetermined width [at column 26, line 9, as the pinknoise pulse is emitted initially with a long on-state];

the environmental coefficient is uniquely determined by the operational environment [at column 26, line 67-column 27, line 8, as the estimate of signal degradation separates room reverberation effects];

the environment is of a voice-producible system [at column 20, lines 54-63, as ambient and unwanted audio picked up by the microphone may be a tuned television's program audio].

Kimura

20. Claims 1, 2, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Kimura [US Patent 5,267,323].

21. Regarding claim 1, Kimura [at Figs. 4-10 and 19-24] describes a modification that reproduces data in memory through a speaker.

As a preliminary matter, the Examiner posits that several appearances of the symbol "A/D" are uncorrected typographical errors that should be "D/A", at least at Fig. 23 (item 221) and column 21 (line 26).

Kimura [at abstract] describes a voice command identifier and describes the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

a memory and data retrieved from it [see Fig. 23, item 210, and its descriptions, especially at column 21, lines 21-24, of RAM from which data with respect to a voice command are read];

first and second d-a converters configured to convert that retrieved data into analog signals and analog signals output from the second d-a converter [see Fig. 23, items 210, 220, 221, 224, and their descriptions, especially at column 20, lines 47-49 and column 21, lines 21-27, of the D/A

converter assembly (comprising a plurality of D/A converters) converts the supplied data read from RAM into analog data by a D/A converter];

an output selecting switch configured to select the analog signals (or another sound signal) so as to provide the selected (by-the-switch) output to a speaker [see Fig. 22, items 202, 204, 201, and its descriptions, especially at column 21, lines 17-51, of the recall switch applying the reproduction signal to the control unit to read the voice data from RAM and convert it into an analog signal to drive the speaker to reproduce the voice command];

an adder configured to received an electrical signal from a microphone and output an object signal [see Fig. 8, items M1, 34, 30b, 21,, and their descriptions, especially at column 8, lines 36-45, of the differential amplifier receiving a voice command from the microphone and producing a signal indicative of output signals from amplifiers];

a second a-d converter configured to receive the object signal and convert it into a second digital signal [see Fig. 8, items 34, 31, 32, and their descriptions, especially at column 8, lines 43-53, of an A/D converter assembly converting (one of) the differential output signals into digital signals];

a first a-d converter configured to receive a sound signal and convert it into a first digital signal [see Fig. 23, items M, 211, 212, 215, and their descriptions, especially at column 19, line 50-column 20, line 25, of an A/D converter receiving an amplified, filtered, rectified, filtered voice command and converting into digital signals].

22. Regarding claim 2, Kimura also describes:

a microprocessor [see Fig. 22, item 16, and its descriptions, especially at column 6, lines 45-47, of a microprocessor comprising the controller of the transmitter];

controlling memory operations [at column 21, lines 12-24, as the CPU of the control unit for reading from memory];

controlling the first a-d converter [at column 10, lines 21-24, as the controller introducing digital data (input voice command signal) through the interface];

controlling the adder [see Fig. 8, items 15, 34, and their descriptions especially at column 8, lines 7-25, as the controller enables the transmitter (of Fig. 6, item 10A) to operate when a voice command is applied];

controlling the first and second d-a converters [at column 21, lines 59-66 and line 25, as controller gives operations instructions for the control operation of D/A converter assembly];

controlling the switch [at column 21, lines 59-66 and line 19, as controller gives operations instructions for the control operation of reproduction switch].

23. Regarding claim 15, Kimura also describes:

an audio signal generator configured to generate the sound signal based on a signal received from the internal circuitry [at column 12, lines 54-60, as a television set sound reproducing device to reproduce television set sound that enters as noise with the voice command through the microphone];

a voice recognizer configured to recognize the object signal included in the electrical signal output from the microphone [see Fig. 8, items M1, 34, 22 and their descriptions, especially at column 9, lines 27-column 10, line 1, of the speech recognition processor identifying input voice commands of the output of the differential amplifier having and input from the microphone signal of noise and voice command].

***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Kimura and Rodriguez**

25. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura [US Patent 5,267,323] in view of Rodriguez et al. [US Patent 6,889,191].

26. Regarding claim 4, Kimura describes the included claim elements by dependency as indicated elsewhere in this Office action. Kimura also describes partitionable RAM and ROM; however, Kimura does not explicitly describe storing an environmental coefficient uniquely determined by environment.

Rodriguez [at abstract] also describes a voice command identifier, and Rodriguez describes:

a first sub-memory configured to store an environmental coefficient uniquely determined by an environment [see Fig. 8, item 922, its buffers, and its descriptions especially at column 26, line 67-column 27, line 8, of storing in memory the estimate of signal degradation that separates room reverberation effects];

the environment is of a voice-producible system [at column 20, lines 54-63, as ambient and unwanted audio picked up by the microphone may be a tuned television's program audio];

a second sub-memory configured to store the first digital signal (or other) [see Fig. 8, item 922, its Incoming User Audio Buffer, and their descriptions, especially at column 21, lines 3-30, as the incoming digital stream is stored in an incoming audio buffer].

As indicated, Rodriguez had described a first sub-memory configured to store an environmental coefficient uniquely determined by an environment at the time of invention. Since Rodriguez [at column 26, line 67-column 27, line 8] also points out that storing the estimate of environmental degradation and buffering the voice coming in through the microphone has the advantage of employment for cancellation of room reverberation effects from the voice command stream from the microphone, it would have been obvious to one of ordinary skill in the art of speech recognition at the time of invention to include the concepts described by Rodriguez at least a first sub-memory configured to store an environmental coefficient uniquely determined by an environment at the time of invention and a buffer for the incoming voice command in Kimura's preprocessor because effects of the environment, such as reverberation of the TV audio, could be cancelled from the voice command before passing it to Kimura's recognition procedures to improve the matching against stored patterns without the environmental effects.

27. Regarding claim 5, Rodriguez also describes:

acquire an environmental coefficient [at column 27, lines 6-8, as compute and store an estimate of signal degradation];

by digitizing a signal input into a microphone [see Fig. 6, items 891, 900, and their descriptions, especially at column 16, lines 47-50, of digitizing from the microphone];

the signal input is digitized for a predetermined time period [at column 21, lines 3-30, as the incoming digital stream is stored in an incoming audio buffer fixed to a size];

the signal input is digitized after a pulse is output [at column 23, lines 23-25, as effect the record of incoming audio signal at the end of emission of the pinknoise pulse];

the pulse is of predetermined amplitude [at column 27, lines 3-5, as the amplitude of emitted version of pinknoise stored in the outgoing audio buffer];

the pulse is of predetermined width [at column 26, line 9, as the pinknoise pulse is emitted initially with a long on-state];

the pulse is output from the speaker [at column 26, lines 2-9, as pulses effect pinknoise emitted by speakers].

#### ***Allowable Subject Matter***

28. The following is a statement of reasons for the indication of allowable subject matter:

a. The allowable subject matter of claim 8, and by dependency claims 9-10, resides in the whole structure and interaction expressed by the combination of all limitations compared to the prior art of record. No particular reference provides relevant, objective evidence to make the claimed method obvious by changing the closest prior art (Rodriguez, Kimura) so that an analog signal of accumulated, multiplied result from a digital signal and an environmental coefficient is subtracted.

b. The allowable subject matter of claim 3 resides in the whole structure and interaction expressed by the combination of all limitations compared to the prior art of record. No particular reference provides relevant, objective evidence to make the claimed apparatus obvious



by changing the closest prior art (Kimura, Rodriguez) so that the analog signal from the first d-a converter is received by the adder and subtract its analog output from the microphone's output.

c. Claim 6 at least sets forth allowable material similar to claim 8.

d. The allowable subject matter of claim 11, and by dependency claims 12-14, resides in the whole structure and interaction expressed by the combination of all limitations compared to the prior art of record. No particular reference provides relevant, objective evidence to make the claimed method obvious by changing the closest prior art (Kimura, Rodriguez) to recognize an object signal and convert the object signal into a digital signal, both in the case of determining a result that shows that a setting operation is to be performed, particularly with accumulating the value of the digital signal converted from the object signal.

### ***Conclusion***

29. The following references here made of record are considered pertinent to applicant's disclosure:

Todd et al. [US Patent 4,700,361] describes a pre-processing circuit that removes noise introduced into a signal by a medium and an embodiment with digital to analog conversion.

Tsurufuji et al. [US Patent Application Publication 2001/0029449] describes buffering noise parameters and voice parameters so digital representations can be multiplied and subtracted to remove noise from voice.

30. Any response to this action should be mailed to:

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P.O. Box 1450  
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**or faxed to:**

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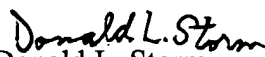
(703) 872-9306, (for informal or draft communications, and please label "PROPOSED" or "DRAFT")

Patent Correspondence delivered by hand or delivery services, other than the USPS, should be addressed as follows and brought to U.S. Patent and Trademark Office, Customer Service Window, **Mail Stop Amendment**, Randolph Building, 401 Dulany Street, Alexandria, VA 22314

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Storm, of Art Unit 2654, whose telephone number is (571) 272-7614. The examiner can normally be reached on weekdays between 8:00 AM and 4:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: [ebc@uspto.gov](mailto:ebc@uspto.gov). For general information about the PAIR system, see <http://pair-direct.uspto.gov>.

May 31, 2005

  
Donald L. Storm  
Patent Examiner  
Art Unit 2654